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THE DEMAND AND SUPPLY CONCEPTS: AN INTRODUCTION TO THE STUDY OF MARKET PRICE

The present work has been undertaken in the belief that the existing status of economic theory calls urgently for the restatement of economic concepts and for the revision of fundamental economic problems. In the world of business and industry most essential changes have been wrought out in the past half-century. The rapid subjugation of nature by social forces; the growing predominance of the pecuniary or acquisitive over industrial motivation; the progressive concentration of pecuniary authority and discretion as illustrated in the development of monopolies and in the increasing directive power of small groups of financial agents; the growing importance of the time element in economic activity resulting from the roundaboutness of the modern industrial process and a transition from money to credit economy¹ —

¹ The purposes of this introduction forbid more than this bare reference to the revolutionary forces in contemporary economic life. These forces and their implications have recently been treated at considerable length by writers of repute, and notably by Americans. The distinction between the pecuniary and industrial motives and the implications of this distinction are considered by Dr. Thorstein B. Veblen in his recently published *Theory of Business Enterprise* (Scribner's, 1904). This work also contains a suggestive chapter on "The Use of Loan Credit in Modern Business," which is practically reprinted from the "Decennial Publications of the University of Chicago," First Series, Vol. IV, p. 31. The distinction between pecuniary and industrial is brought out also by Dr. Werner Sombart in *Der moderne Capitalismus* (Leipzig, 1902). The implications of the time element have been systematically considered by Dr. Frank A. Fetter in *The*

these and other manifestations of economic development have, especially of late, altered in some of its fundamental aspects the material of economic speculation.

In the world of science the half-century has wrought equally essential changes which seem also to require readjustment in the field of economic theory. The evolutionary point of view has become firmly established, and has revolutionized men's notions in regard to the essential nature of scientific problems and scientific method. Sciences under its influence no longer concern themselves primarily with the normal, the typical, the abstract, but tend to recognize only the concrete and the actual; they are no longer content to ask what and how, but increasingly demand to know *why*; they are no longer satisfied to find answers to their queries in morphological classification and in mechanical equilibrium of present but abstract forces, but demand solutions of scientific problems in terms of the life-history of concrete material. In short, in obedience to the evolutionary spirit, there has been a notable tendency in modern science to abandon abstract material for concrete; classification in terms of present form and function for classification in terms of genesis and process; static for dynamic problems; mechanical solutions for solutions in terms of cumulative change.²

Principles of Economics (Century, 1904), and also in the following recent contributions to periodical literature: "Recent Discussions of the Capital Concept," *Quarterly Journal of Economics*, Vol. XV, p. 1; "The Next Decade of Economic Theory," *Publications of the American Economic Association*, Third Series, Vol. II, p. 236; "The Roundabout Process in the Interest Theory," *Quarterly Journal of Economics*, Vol. XVII, p. 163; "Relations between Rent and Interest," *Publications of the American Economic Association*, Third Series, Vol. V, p. 176. To Böhm-Bawerk should be given credit for initiating the scientific discussion of the time element in economics. See his *Positive Theory of Capital*, Book V. Several writers have of late considered the monetary implications of the modern development of credit, but special recognition in this field should be accorded to Professor J. Laurence Laughlin. His main work in this connection is to be found in *The Principles of Money* (Scribner's, 1903), in the *Final Report of the Monetary Commission of the Indianapolis Convention*, 1898, and in a paper on "Credit" contributed to the *Decennial Publications of the University of Chicago*, First Series, Vol. IV, p. 1.

² The citation of specific authority in proof of these statements hardly seems to be required. The whole body of work in the field of biology under the Darwinian impulse substantiates what is here said.

To the influence of this dual revolution in fact and thought economics has been slow to respond. Economists indeed, almost *en masse*, have seemed to feel the need of theoretical readjustment, but, with a few notable exceptions, efforts in this direction have been relatively ineffective. The progressive revolution in the economic organization has been met in general by theoretical repairs merely, such as are implied in perfunctory distinctions like that between private and social capital, in greater emphasis on the element of "friction" in connection with the "normal" competitive activity and results, in recognition of the more obvious monetary implications of the growing importance of credit. The revolution in scientific thought has in general produced in the field of economic reasoning nothing more serious than harmless diversions, such as are represented by emphasis on the relativity of economic percepts, erudite discussion of the evolution of terminology, and introductory essays on the growth of modern industry. In fact, the great body of generally accepted economic theory seems to have remained essentially unmodified by the recent progressive revolution both in science and economy.

If proof and illustration of this statement are needed, they may be found in the current conception and solution of any typical problem in the field of economic theory. Take, for example, the problem of wages. Whether the view of the classical English writers, or that of the Austrian school, or of the group of eclectic writers best represented by Alfred Marshall, be taken, the wage question is considered altogether as a static problem, its solution is undertaken solely by the method of equilibrium of forces, and the analysis of the conditions which determine wages shows a defective, and one might almost say an archaic, conception of the present-day economic situation.

The slightest consideration seems sufficient to justify the last of these charges. In spite of the splendid development of monopoly conditions, and the widespread organization of employers and laborers, the normal wage-rate is still taken to be one fixed by free and individual competition. In face of the evident pecuniary authority and discretion of the business undertaker, and the progressive concentration of this authority, indus-

trial initiative and discretion are still supposed to reside in the laborer equally with the employer; where efficiency is supposed to constitute a condition determining wages, practically no distinction is made between efficiency which is industrial and that which is merely pecuniary; and, notwithstanding the universal recognition of the roundaboutness of the typical modern industrial process, orthodox³ doctrine contains hardly the beginnings of an adequate consideration of the time element in relation to wages. In short, in the analysis of the conditions which govern the fixing of wages the essential and fundamental factors of modern economy are very largely ignored. The economic organization which is taken as contemporary by these schools of thought is one which existed, or was supposed to exist, in an earlier economic era. This is true not merely in relation to the wage question, but to economic problems generally.

A somewhat more detailed consideration is necessary to show that the wage problem, in the view of orthodox economics, is static merely, and that it is solved solely by the method of equilibrium. If we analyze the wage discussions of these dominant schools of economic thought, we find that in the case of all of them the central conception is that of a normal wage; this wage is not any definite or concrete or historical thing, but is admittedly an abstraction; the problem as conceived is not what is this normal wage, or how does it progressively vary, but what are the general and abstract forces that determine it; the solution of the problem is sought in the examination of conditions that are supposed normally to govern the strength of opposing forces; and finally the wage problem, so far as considered, is solved, when, the strength of opposing forces having been demonstrated, the abstract conditions of stable equilibrium have been determined.

The essential truth of this analysis will be at once recognized if we sketch, with a few conventional strokes, the rough outlines of the actual wage doctrine held by these dominant economic schools. All three seek to establish the universal law of wages; in other words, to show how wages in the abstract are deter-

³ The term "orthodox" is here used as a convenient one to represent the ideas of any of the schools of thought mentioned above.

mined; all, in one way or another, subscribe to the doctrine that wages are determined by the operation of forces essentially described in the terms "utility" and "cost;" all examine the conditions and forces that normally underlie and determine manifestations of utility and cost; all find the normal wage to be a resultant of stable equilibrium of the opposing forces underlying the utility and cost phenomena; and, though all discuss to some degree the variation of actual from normal wages, this variation is also discussed in terms of the conditions that underlie these opposing forces. Evidently the differences between the adherents of these schools, which for half a generation have formed the backbone of economic controversy, have been merely disagreements as to the proper analysis and classification of the forces representing utility and cost, and as to the relative emphasis that should be placed on these determining forces. The classical economists emphasized cost, and classified the forces representing cost and utility as conditions of supply; the Austrians placed the greater emphasis on utility, and chiefly classified under the heading of demand; the eclectics abandon emphasis and strive to utilize both classifications.

It is apparent that these differences do not touch the fundamental conceptions of the nature of the problem and the method to be employed in its solution. The problem as conceived is static in its nature; the method of solution is the method of equilibrium. Moreover, it is clear that the current tendency to abandon the crude hedonistic conception of economic motive, and to recognize that man's economic action is, in part, habitual if not instinctive, altruistic and constrained, admirable as it may be, does not essentially alter this conception of problem or method; nor is this alteration achieved by the tendency to a more ultimate analysis of the conditions that underlie utility and cost in social, institutional, or even in historical terms. In short, among the adherents of the present dominant schools of economic thought there is in the solution of this problem no attempt to adopt the evolutionary standpoint. And this attitude in regard to the problem of wages is general and typical.

In the examination of this typical economic problem, then, we find ample proof that contemporary economics ignores both

the evolutionary point of view and the most essential results of recent economic development. In other words, we find that orthodox economists have devoted themselves exclusively to what might be called, in the broadest sense of the term, classification; that this classification has been exclusively in terms of present and non-evolutionary data, and that classification even in these terms has been altogether incomplete and defective.

It seems clear, therefore, that the existing status of economic theory calls urgently for the restatement of economic concepts and for the revision of fundamental economic problems. But we have now to ask what is the nature of the restatement and revision which are needed. Quite evidently it is most essential that the facts of modern business and industry should be correctly apprehended. Evidently economics, dealing, as it does, with a developing material, cannot ignore its dynamic problems and the method of genesis and process. It must strive to become an evolutionary science. Finally, it is evident that if economics is to deal with static problems by the method of equilibrium—in other words, in the broadest sense of the term to classify its material in terms of present form and function—its classification must be true to the modern economic situation. The only question at all in doubt is this: Must economics, in response to the modern scientific spirit, cease to concern itself with classification on the basis of present form and function, and with the problems of social statics? In other words, must it abandon its present aim and method?

The answer to this question should undoubtedly be in the negative. The contrary notion seems to be based on the analogy between economics and the biological sciences. But does the acceptance of this analogy really require an affirmative answer to the question just stated? In reality, it does not. Indeed, when carefully considered, it seems not only to justify, but positively to emphasize, the need for continuous activity in the field of economic statics. That the static problems cannot be ignored is shown by the fact that those sciences which are most completely dominated by the evolutionary ideal have not succeeded in freeing themselves entirely from the problem of classification in terms of

existing data.⁴ This fact results from the nature of scientific investigation, which, before it can ask the question *why* in evolutionary terms, must, provisionally at least, answer the question *what*. And whatever may be the ultimate relation of these problems,⁵ practically their solutions constitute two relatively distinct scientific aims. In the very nature of things, that is to say, there must be in economic study these two classes of problems—the static and dynamic, each with its appropriate method.

⁴ In a paper on “The Empirical Method of Economic Instruction,” published in the *Journal of Political Economy*, Vol. IX, No. 4 (September, 1901), on pp. 486, 487, the writer attempted to characterize the biological sciences in these words: “We have seen that these sciences aim in general to present systematic accounts in causal terms of groups of facts whose relationships are subject to cumulative change. Now, the changes of relationship which these sciences have to consider are of two general kinds: (1) within the group there is a definite, regularly repeated process of change which may be termed the life-process; and (2) the group itself is undergoing a definite progressive change, in general, from a simple to a more complex organism or organization. Such being the case, these sciences, in furtherance of the general scientific aim, have evidently two main objects. These are, first, to give systematic and causal accounts of the organisms or organizations as they are, and, secondly, to give systematic and causal accounts of the processes of development of these organisms or organizations.

“The attainment of the first of these ends involves three logically distinct lines of study: (1) a study of the forms of the organism or organization; (2) a study of the life-processes going on within the organism or organization; and (3) classification of these forms and processes. The attainment of the second aim involves the same lines of study, historically and comparatively, with special reference to the forces at work tending to modify structure of organism or organization and the processes going on within. This analysis of the scientific aim in connection with the material involved gives us the logical division of the sciences belonging to the [organic group]. That the analysis is essentially correct is evidenced by the fact that these divisions do in fact correspond to the essential divisions of complete organic sciences. Thus botany comprehends, first, morphology (including histology), physiology, and systematic botany, or study of form and process leading to classification, and, secondly, a number of lines of study intended to lead to a genetic account of plant life. This second group of studies is better worked out in zoölogy, where we have phylogeny, a study of the origin of species; ontogeny, a study of the origin of individuals; embryology, paleontology, studies of the progressive development of individuals, etc.”

⁵ Of course, in a sense, the second of these problems is included in the first, since the organism, as it is, is a product of the past development, and can be completely understood only in the light of this development. But assuming the present situation as it is—i. e., simply as having become—then we may, for convenience, without scientific inaccuracy, separate its study into an account of the life-processes now going on within the organism in terms of causes now operating, and a causal account of the genesis of this organism.

Economics, then, in failing to adopt the evolutionary viewpoint, has not gone fundamentally wrong. It has merely lagged behind the biological sciences. The reason for this is plain and impersonal. It is that, compared with these sciences, the problems of classification and of the life-process in economics are exceedingly complex and shifting. This very reason, however, emphasizes not only the necessity for continued and vigorous prosecution of the static economic problems, but also the imperative need of progressive restatement and resolution of these problems, if they are intelligently to present and interpret the contemporaneous facts of everyday life. Intelligent solution of many of these static problems we have not at present, hence the present need of theoretical revision.

It would be an error, however, to suppose that the immediate need of the science is merely reclassification in terms of present data and review of the present life-process in the economic field. The truth is that, for the healthy growth of economics, the static and dynamic problems must be developed contemporaneously; for, as we have endeavored to show, the question *why* must wait upon the answer to the question *what*. But, on the other hand, it is undoubtedly true that a potent reason for the inadequate and archaic view which present-day economics prevailingly presents of the facts of modern economy results very largely from a failure to attempt a solution of the problems of economic evolution.

What we really need, then, in economics is both fundamental revision of old static concepts and problems, and an advance on new and dynamic ones. The imperative character of the latter work seems almost self-evident. In the present state of economics, however, it does not seem altogether unreasonable to regard revision of static problems as equally imperative. It is only necessary that in carrying on this labor we should not naïvely imagine, as economists have been wont to do, that we are engaged in the only, or in the ultimate, work of the science. We should never forget that the ultimate aim of organic science in this day and age is to interpret life, not in the abstract, but in the concrete, and not in terms of being, but in terms of becoming.

The foregoing considerations perhaps sufficiently justify at

the present time a somewhat detailed and technical discussion of the problem of market-price determination. This problem is obviously the kernel of static economic theory. Any attempt, therefore, at its re-solution more in harmony with the facts of the actual pecuniary and industrial life about us cannot be utterly devoid of worth in connection with that general revision of static economic doctrine which seems so desirable. There is, moreover, a special reason for attacking this problem boldly and vigorously. Nowhere else in economic theory perhaps has controversy raged so continuously and fiercely. As a result, discussion of this most practical and primary problem has tended to become doctrinaire and partisan. The significance of the rapid and essential change in modern economy has been overlooked, and the intelligent study of secondary theoretical problems delayed and hampered. There seems, then, to be a real need for the study of market price frankly as a static problem and frankly by the method of equilibrium; that is to say, study simply and solely of the process by which price in the abstract is fixed in the market; a study, moreover, which shall attempt to include all the essential forces that contribute to price determination under the actual conditions of present-day economy. Such a study the following work is intended to be.

Conceived in this manner, market price appears as a resultant of the opposing forces, demand and supply. And, thus conceived, the problem naturally subdivides itself into a number of distinct, but organically related, inquiries. First, it seems necessary to inquire into the more objective nature of the demand and supply concepts; that is, to establish the general or universal characteristics of these phenomena under modern economic conditions. But it is evident that the demand and supply which actually determine price are not general but specific phenomena operating in a market; and when this is clearly apprehended, the suspicion is aroused that the specific character of demand and supply may vary in different markets. We find ourselves then, secondly, committed to a study of the general and specific nature of markets, and the specific characteristics of market demand and supply. The character of demand and supply having been thus determined, we naturally proceed, thirdly, to the objective study of the

market process; that is, to the actual process by which, under various conditions, demand and supply (if at all) in the first instance determine price. The consideration of these three topics constitutes what might be termed the objective or descriptive study of market price, and simply prepares the way for an examination of the nature and operation of the forces which underlie and determine price-fixing. This work would naturally begin with the immediate subjective explanation of the demand and supply phenomena and the objective market process as it has been shown to exist; that is to say, a study of what might be termed the subjective mechanics of the price problem. There would then follow, naturally, a study of the ultimate determinants of demand, a study of the ultimate determinants of supply, and a final summing up of the essential and ultimate determinants of market price.

The discussion which here follows is devoted entirely to the consideration of the first of the logical market-price inquiries named above—that is to say, to an inquiry concerning the general characteristics of the demand and supply concepts. In this discussion, the aim is to build up an adequate schematic representation of demand and supply in their general character of market-price determinants, and in conformity with the actual, but more general, conditions of modern economy. That the current treatment of the matter is, on the whole, unsatisfactory seems the result of two main causes—failure to view demand and supply distinctly and consistently as market-price determinants, and, secondly, failure to realize that the essential characteristics of demand and supply have possibly been altered and augmented as modern economy has developed. In our work, therefore, of schematic construction the main specific tasks will be to assemble in orderly manner the demand and supply characteristics current in economic thought, where necessary, to restate these characteristics carefully from the view-point of the price problem, and to discuss the effect upon the demand and supply concepts of the essential development of recent economy. This work will be with design both impersonal and non-historical. In harmony with what was said earlier in this introduction, it is believed by

the writer that the work here to be done cannot be materially furthered by the erudite discussion of the evolution in economic literature of the demand and supply concepts.

I

Extreme difficulty is inherent in any attempt to abstract from the shifting mass of material and immaterial happenings of everyday life, and to characterize clearly, distinct classes of economic phenomena. This difficulty is emphasized, in the case of demand and supply, by special ambiguities connected with the ordinary use of the terms. It will be well, therefore, at the outset of this study, in order to avoid unnecessary difficulties, to remove as far as possible the ambiguities by making clear in what sense these terms are to be used. It is possible to distinguish in economic discussion two quite different uses of the terms "demand" and "supply." In one case, these terms are employed in a general philosophical sense to indicate the essential nature of demand and supply as such. An example of this usage is where it is said that demand and supply are identical—two sides of the same shield—in order to indicate that goods which are offered for other goods are at the same time the objects of offer in terms of other goods. Or, where similar language is used, to indicate that in the exchange of two commodities the buyer of either good is at the same time the seller of the other, and vice versa. In the other case, these terms are employed, in a much narrower and more specific way, to indicate the demand for and supply of any single commodity, as when it is said, for example, that at a given price the demand for a certain commodity exceeds its supply.

These two uses of demand and supply should not be confused. In which of these senses the terms should be employed at any time obviously depends upon the nature of the problem in hand. In the present instance the main objective is the study of the conditions which determine market price in the specific but abstract case. It is, in the latter sense, therefore, as distinct market phenomena causally related to the price of a single definite good that the terms "demand" and "supply" are to be employed in this thesis. To determine the general characteristics of demand and

supply, thus definitely conceived, is our specific problem. In order to judge of the truth of what follows, this fact must be kept carefully in mind.

Furthermore, conceived thus as specific market phenomena, demand and supply may be either total or individual. To avoid possible confusion arising out of the frequent practical necessity, in the course of the discussion, for reasoning in terms of both these aspects of demand and supply, it will be well here to state our conception of their mutual relations. This will involve a provisional and rough description of the market. Provisionally, then, we may describe the market where the price of any commodity is fixed, as composed of an indefinite number of competitively related individuals belonging to two classes—those who are engaged, or are supposed to be engaged, in offering the good in question for sale, and those who are engaged, or are supposed to be engaged, in making offers to purchase the good. For our present purposes it is not necessary to decide whether all the individuals offering and making offers in such a competitive group, or whether only certain of them, make up the actual market group. In either case, each of the individuals belonging to the first class, and who is in the market, contributes a supply of the goods, and the total market supply is evidently the sum of the supplies offered by all the individuals in the market. In the same manner we may describe the total market demand for the commodity as the sum of the demands of all the individuals in the market. In short, total market demand and total market supply are made up of individual market demands and supplies. It follows that the laws which underlie and determine individual demand and supply in any market also underlie and determine total demand and supply in the same market. No error, then, will be involved in reasoning from the laws of individual demand and supply to total demand and supply. This we shall have frequent occasion to do.⁶

Having now disposed as far as possible of the ambiguities with which our problem is beset, we may proceed, without further

⁶ The term "market" will frequently be used in the abstract and generic, rather than in the specific, sense.

delay, to the determination of the general character of the market demand and supply.

It is to be noted then, first, that demand and supply, as price determinants, are distinct and mutually exclusive phenomena. This statement is, to all intents and purposes, axiomatic. But it seems necessary, not only to state, but to emphasize, this self-evident fact, because of the quite general assumption in economic literature to the contrary. This assumption obviously results from the failure to differentiate clearly demand and supply as specific price determinants from these phenomena in the more general sense. When this differentiation is made, it is at once clear that to assert the identity of demand and supply as market phenomena is practically to deny the existence of the price problem, since it evidently constitutes a denial of the whole process of market adjustment from which price is supposed to emerge. Clearly, then, as determinants of the price of a single but abstract market commodity, demand and supply must be conceived as distinct and mutually exclusive.

But, secondly, though distinct and exclusive phenomena, demand and supply in any specific case stand in reciprocal relation to the same commodity, and are to be expressed in terms of the commodity concerned. The main proposition which underlies all demand and supply discussion from our present viewpoint is: The market price of a commodity is determined by the demand and supply of *it*. It is a subtle reintroduction of the more general conception of demand and supply, and therefore of the elements of ambiguity and confusion, to express the supply of a good as so many units of it, and the demand for it as so many units of some second commodity. We may not be willing to subscribe to the proposition that price is fixed when the quantity demanded is equal to the quantity supplied. Yet we all feel that this orthodox proposition is worthy of consideration. But the statement would be quite meaningless, were the quantities referred to not quantities of the same good. Consider the absurdity of the statement, in a market where bushels of apples are exchanging for hundred-weights of coal, that the price of apples is fixed where the quantity of apples is equal to the quan-

tity of coal. Evidently, if demand and supply are forces whose relationship determines price in the market, they must be strictly comparable. This they cannot be unless they are qualitatively identical.

The principle here contended for is not really violated when demand and supply are immediately expressed in terms of different commodities, provided an assumption is made by means of which the diverse expressions may be reduced to terms of the same character. This is illustrated when, in current discussion, supply is expressed in bushels, and demand in dollars at a certain price per bushel—when, for example, the supply is taken as ten bushels, and the demand is expressed as five dollars on the assumption of a one dollar price per bushel. This evidently is but a roundabout way of saying that the supply is ten bushels, and the demand under the conditions assumed is five bushels. In the interest of clearness, however, such methods of expression should give place to the direct statement of demand and supply in terms of the commodity whose price is to be determined.

Thirdly, though demand and supply are necessarily expressed in terms of quantity of what is usually a physical commodity, they are not to be regarded as physical phenomena merely. This is quite evident in the case of demand; for, as demand must be expressed in terms of the good concerned, to make it physical would be to make the commodity constitute its own demand. On the other hand, demand is not merely psychological—not merely desire. In the end, physical or objective goods must be offered in payment for the commodity demanded. There is no real demand, no effective price-determining force, in offers that are not backed, or believed to be backed, by goods—in offers that represent desire merely. What, then, is the relationship of the subjective and the objective elements in demand? Which is the essential and determining element?

A little consideration shows that it is not the physical or objective element. Grant that demand cannot be effective without the offer or the willingness to offer for the good in question some other commodity or commodities in the market. The question at once arises: What other commodity? Evidently not all

other commodities in the market will stand in this relation to any one good. And equally evident is it that mere physical or inherent characteristics do not mark off those goods which are from those which are not offered for any given commodity. We are driven, then, to assume that the determining quality of demand in any specific case is not physical, but psychological. That which determines that one good shall be offered in exchange for another is in fact the psychic attitude, the state of desire, of the putative owners or possessors of the so-called "demanding" goods—the desire which they have, on the one hand, for the good whose demand is in question, coupled with the desire which they have for the goods in terms of which they must make offer and payment.

Desire, then, is the essential element of demand: the physical is at best merely a limiting factor. And even this is perhaps laying too much stress upon the physical element. For those who will observe the market must recognize that the effective demand which may be exerted for a good by those who are bidding for it is not limited by the physical goods over which they can assert the title of ownership, or which are in their possession. So long as any bidders can convince suppliers of the good in question that they will be able at the end of an acceptable period to produce acceptable means of payment, their bids constitute demand, though they may not, at the time, control a single physical unit of the commodity or commodities in which payment is to be made. It is not, then, the actual amount of physical or objective goods that can be given for a commodity that limits the demand for it in the market, but the amount which bidders are able to convince prospective sellers of the commodity that they are willing and able to pay for it. Nor is this willingness and ability which limit demand necessarily measured by the actual bids of prospective purchasers in the market. It cannot be too strongly emphasized that it is the *imputed* willingness and ability to take and pay for a commodity that limits the demand for it. The generally accredited rumor that an astute financier is secretly bidding, or about to bid, for ten thousand shares of a certain stock, in order to reap the benefit of a rumored increase in earning power which

they represent, will often just as effectively increase the demand and raise the price of this stock as though he actually stood in the market place and evidenced his willingness and ability by actual bids.

Demand for a good, then, is a compound of elements which are partly subjective and partly objective. It is, on the one hand, a desire or willingness, real or imputed, on the part of prospective purchasers to take the good from the market, and, on the other hand, an ability, real or imputed, of these prospective purchasers to make to prospective sellers the necessary and satisfactory objective payment for the good in question. The most essential element in all this, however, is undoubtedly the psychic.

Turning now to supply, it appears at first blush that the physical or objective constitutes its more essential element. Well-established usage seems to sanction the statement that supply of a commodity consists at any time in the amount of it which is in the market. But does the acceptance of this statement really stamp supply as essentially an objective or physical phenomenon? A little consideration shows that it does not; for to accept this conclusion would evidently be to assume, contrary to the fact, that the state of being in the market is a purely objective or physical matter. Experience contradicts this assumption. A purely cursory observation of the market process shows that it is not the physical or objective shifting of goods that appears to cause price variation on account of changes in supply. It has been demonstrated on innumerable occasions that without the moving of a wheel the supply of a good in a given market may be multiplied, or, on the other hand, practically annihilated. Evidently, then, it is not the mere objective presence or absence of a good that determines whether or not it is to be reckoned as supply in any market, but it is the disposition which those who control the good are willing and able to make of it. The essential fact is the willingness and ability of men to offer the good for sale.

Nor in the actual market can it be said that the physical or objective situation, ownership or even existence of the good, sets a positive and inflexible limit on the willingness and ability of men to offer it in the market in such a way as to constitute supply

at any time. Whatever amount of a good prospective sellers in a market can convince purchasers that they are willing and able to deliver at an acceptable time, to be specified in the contract of sale, constitutes supply of that good, it matters not whether the good is at the time of offer actually within the market area, or even in existence, or, if in existence, by whom the present title of ownership is held. Nor is the supply limited by the actual offers which are considered to be *bona fide* by prospective purchasers. As in the case of demand, the amount of supply is a putative matter. Any means which is effective in causing prospective purchasers to impute to prospective sellers the present power and willingness to offer the goods in the market to an additional extent is also effective in increasing market supply.

Confidence, then, in the willingness and ability of prospective imputed sellers to enter into and to perform contracts, rather than any physical condition whatever, is evidently the limiting factor in supply. In strict analogy with demand, supply is in its essence preponderatingly psychological. It is, on the one hand, a desire or willingness, real or imputed, on the part of prospective purchasers to bring forward a good in the market, and, on the other hand, an ability, real or imputed, of the prospective sellers to make to prospective purchasers the necessary and satisfactory guarantee of delivery of the good in question. In short, the amount of supply is the amount of a good which prospective sellers are imputed to be willing and able to offer in a manner considered to be *bona fide* by prospective purchasers.

The forces which influence and determine both supply and demand for a good in any market, then, are to be found in the putative psychological attitude and proprietary condition of the individuals who are supposed to be the prospective sellers and purchasers in the market, of the good in question.⁷

⁷ The failure to understand the partly psychological character of supply, together with a failure to recognize the importance of the fact that goods in the market are wanted largely for future delivery, has lain at the foundation of a great part of the value controversy of recent years, which has consequently presented the edifying spectacle of a contest in which neither compromise nor the victory of either party could result in establishing the truth. The full effects of the time element on supply, as represented in contracts for future delivery and

The fourth important general characteristic of market demand and supply refers to the time at which these phenomena in any specific case of price-fixing may be said to exist. It has become common for economic writers to refer to demand and supply as the amounts, respectively, of a good which are taken or offered in the market at a specified price. The inference frequently, and perhaps unconsciously, drawn from this statement is that the extent of demand and supply waits upon, or is determined subsequent to, the fixing of the price. The mere definite statement of this inference stamps it, of course, as erroneous. It involves the fatal error of looking at the demand and supply of an article as determined by the price at which it actually sells—an error fatal, because it directly contradicts the fundamental assumption of all future payment, will be discussed later. This need not, however, prevent at this point explanation and proof which seems desirable of the statement just made.

The tap-root of the controversy between the Austrian and the classical economists seems to have been their diverse notions of the nature of supply. The Austrians seemed to tend persistently to regard supply as *stock in hand*. The classical economists, with equal persistence, tended always to identify it with *current technical production*. The “stock in hand” idea of supply seems to be that which caused the Austrians to neglect the analysis of the conditions of production, while the technical-production thesis appears to be the parent of the notion, so long a fundamental assumption of the classical school, that market supply is under the governance of the identical cost of production of the goods which at any moment are in process of making.

To reduce these general assumptions of identity to palpable absurdities, however, it is only necessary to enumerate the conditions which their universality would imply. In order that supply at all times should correspond exactly to stock in hand, it would be necessary to assume the non-existence in the market of all bargains for future delivery of goods, and also to deny the possibility of even temporarily withholding produced goods from the market. On the other hand, the assumption of identity at all times of market supply and current technical production would require these assumptions: (1) the impossibility of withholding technically produced goods from the market, and (2) the impossibility of the appearance of a good as supply more than once in any market, in which case the great and rapid fluctuations in supply which are characteristic of modern markets would have to be accounted for by the assumption of perfect flexibility of technical production both as to time and amount, i. e., the ability of the producer to increase or decrease his output at will and without delay. Manifestly the withholding and the remarketing of goods are acts always possible except in the case of very perishable commodities, and the possibility of perfect flexibility of production exists only in connection with immaterial goods—personal services—and in connection with these only in a limited and equivocal way. With the possible exception, then, of very perishable goods, and of those—if there be any such—

price-reasoning, that it is the demand and supply which determine the market rate of exchange, thus involving us logically in a vicious circle. The only premise consistent with our fundamental assumption is that the demand and supply which stand in causal relation to price are phenomena which exist precedent to the act of purchase and sale. This premise must be unequivocally upheld so long as we have discovered no conclusive evidence against the price potency of demand and supply. Fortunately, we are not dependent entirely upon indirect proof of the assumption that demand and supply which are causally related to price in any case exist prior to the specific act of purchase and sale concerned. Universal market experience corroborates this assumption. For the fact must be recognized by all that the act of purchase and

into whose production the time element does not enter, and the amount of whose production is under perfect control, current market supply cannot be assumed to coincide with either stock in hand or current technical production.

It was probably recognition of the untenability of these assumptions in the grosser form that caused them to be presented in a more refined manner as assertions, on the one hand, that market supply is drawn wholly from stock in hand, and, on the other, that it is drawn wholly from current technical production. But in this more refined form they are no less erroneous. Were market demand determined wholly by those prospective purchasers willing and able to take goods for immediate delivery only—in other words, were all bargains for future delivery barred from the market—supply, at any time except in the doubtful cases where production might be assumed to be perfectly flexible, would necessarily be drawn wholly from stock in hand. But the market demand at any time does not come wholly from those who require immediate delivery of goods. In fact, especially in the case of relatively permanent goods—such, for example, as railway supplies and building material—current market bargains very largely take the form of contracts for future delivery. So far as this is the case, manifestly market supply at any time—i. e., that supply which helps to determine market price at any time—must and does transcend current stock in hand.

Equally obvious is it, however, that where bargains are made for immediate delivery—for example, in the case of the great majority of the bargains in connection with goods for immediate consumption—barring the assumption of perfect flexibility of production, supply cannot possibly be drawn from goods in process of production. In such cases supply is necessarily wholly drawn from stock in hand. Unless, therefore, we refuse to consider the market as it actually is, preferring an abstraction whose unreal simplicity bears little relation to the actual, we must admit that market supply is neither what it was conceived to be by the Austrian school or by the classical economists. The fact is that both schools erred in fixing their attention exclusively upon one simple phase of the complex phenomenon supply. Each saw a half-truth, from which each drew conclusions that were wholly false.

sale, under ordinary circumstances, actually annihilates a certain more or less definite quantum of supply and demand through the attainment of the ends toward which men strive in market bidding. We seem justified, then, in assuming that demand and supply, which determine price in any particular sale, attain their final proportions previous to the specific market act concerned. How long previous to this act demand and supply are definitely determined cannot be discussed apart from a careful analysis of the market process under different typical circumstances, and must therefore be left for later discussion.

Acquiescence in the conclusion just reached involves a denial of the assumption, more or less current, that demand and supply can be represented in relation to a given commodity, each as a single definite quantity of the good. Evidently, so long as the price is not determined, prospective purchasers and sellers will not come into the market at any time prepared merely to take or bring forward a definite quantity of the good in question on the arbitrary assumption of a single definite price. On the contrary, both introspection and observation indicate that prospective dealers enter the market committed to no definite single act, but with more or less well-defined schedules in mind of amounts of the good in question which they are prepared to offer or take at various suppositional prices. Nor is it possible price variation alone which conditions the market activity. Aside from the matter of price, there are evidently a number of what may be termed essential market factors or terms, variation in any of which will affect the action to be taken by market bidders.

It should be clear, then, that demand and supply, considered as precedent to the market act, are phenomena which are necessarily *hypothetical* or *conditional*; and, as there must always be a plurality of hypothetical market terms or variants, neither demand nor supply can be adequately expressed except as a series of hypothetical amounts correlated with a series of hypothetical conditions. It follows that a complete expression of either of these phenomena in any particular case would involve a correlation of amounts which prospective bidders are willing and able, or are imputed to be willing and able, to offer or take of the commodity

in question, with all the essential, hypothetical, general conditions of a market bargain; that is to say, would involve as many items as there are possible combinations of all the essential, hypothetical, general, market-bargain conditions. In order, then, to carry forward our discussion of general demand and supply characteristics, it is necessary to inquire what are the general or typical essential market-bargain factors or conditions which determine immediately the action of prospective buyers and sellers, and, having discovered these, to determine their relation severally and generally to bidding in the market.

Proceeding thus, it is to be noted that not all the hypothetical variants which determine the action of bidders in the market can properly be considered as essential, general market-bargain conditions. We must distinguish carefully the general terms in which the offers in the market are made—that is, the conditions which determine the general character of prospective market bargains—from the causes which, on the supposition of a definite bargain character, determine the magnitude of these terms. To give a specific and simple example: In the case where a certain *price* is offered for a certain *quantity* of a good to be determined and paid for at a certain *time*, we must carefully distinguish the price, quantity, and time factors from the subjective and objective conditions represented by the personal *wants* and *habits* of the bidder, and the *quantity* of the good in the market. The former represent general market-bargain conditions, hypothetical correlations of which express demand and supply, while the latter are conditions which must be taken into account in attempting to explain the extent of demand and supply as thus actually expressed.

What, then, are the essential market-bargain conditions or terms, correlative variations of which express the demand and supply of any given commodity? In answering this question, we have the advantage of the sure foundation of empiricism. Actual observation seems to show that the essential terms which are considered in the typical market bargain are: (1) the grade or quality of the commodity in question; (2) the amount or number of definitely specified units of the good; (3) the price to be paid;

(4) the time of delivery and payment; (5) the kind or character of good in which payment is to be made; and (6) the degree of risk of non-payment or delivery involved.

A more careful examination of these six terms seems to throw doubt upon the validity of the inclusion, or at least the independent inclusion, of three of them. The grade or quality would seem to be too nearly the very essence of a good to be regarded as one of its variable attributes. It appears best, therefore, to define commodity or good as an individual in a class of economic articles, all of which are of the same quality; that is, to make every grade of article in connection with which market bidding takes place a distinct good or commodity. This rules out the first of the assumed market-bargain terms. Further, the kind or character of the good in which payment is to be made would seem to be a component element of price. Price is not merely a mathematical or numerical entity, but is in every case a numerical expression concerning a definite thing. We should assume, then, that the single expression "price" includes the terms numbered (3) and (5) above. The degree of risk also appears capable of being regarded either as something which is expressed through price, or as one of the causal elements quite outside the essential terms of the market bargain. At least, it may be said that the degree of risk does not enter into the specified terms of the bargain, and is always considered by bidders in determining prices at which they are willing to bid. These considerations seem of sufficient weight to cause it to be thrown out of the list of essential market-bargain terms.

There remain, then, three distinct market factors, the possible combinations of whose correlative variations fully express market demand and supply. It remains to give specific expression to these phenomena in terms of the three surviving factors. The difficulty of the task makes it expedient to attack it in the simplest manner possible. We shall, therefore, express demand and supply first in terms of two of these factors, and then add to these expressions whatever complexity results from the inclusion of the third and final term.

Fifthly, then, we may say that, other things remaining the

same—the time element being disregarded—the extent of the demand or supply of any good is the resultant of a correlation of various quantities of it with various hypothetical prices. We have already said that observation and introspection furnish ample proof of this statement. It is true that there are circumstances under which individuals enter the market apparently definitely committed to the purchase or sale of a fixed quantity of a commodity at a fixed price. But it is probable that even in such cases the majority of individuals are prepared, more or less consciously, to vary the quantity and price, if circumstances make it necessary to do so, in order that they may effect a trade. For example, the purchaser, though he may have entered the market practically committed to the acquisition of a certain definite amount of the good in question at a definite price, will often purchase a less amount of the good, if he finds that his price estimate is too low, rather than retire from the market altogether without the good in question; and he will frequently increase the quantity which he is willing to take as soon as he finds that it can be obtained at a less price per unit than he had anticipated. And the opposite is true for the seller of the good. The conventional two for ten cents and three for a quarter illustrates the principle. But, under many circumstances, the keen trader does not wait until he has entered the market to correlate amounts and prices of the good in which he expects to deal. He has in mind, before his appearance as bidder, a definite schedule of varying amounts of the good in question which he is willing and able, or which he proposes to convince others that he is willing and able, to purchase or sell at varying prices. Whether or not, however, these schedules are perfectly definite, and whether or not they are worked out before the entry of the individual into the market, does not affect essentially the general character of demand and supply. The essential fact is that in any case more or less definite hypothetical commodity-price schedules exist in the minds of individuals previous to the act of purchase and sale.

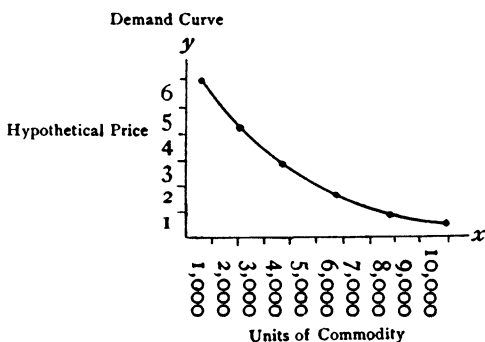
We may therefore assume that, leaving aside variation in the time element, the total demand or supply of a commodity in any market may be represented by one combined schedule of correlated amounts and prices. In short, abstracting from the time element

the demand for a commodity is to be represented by a schedule of the varying amounts of the good which prospective purchasers are willing and able, or are imputed to be willing and able, to take at varying hypothetical prices, and the supply by a schedule of the varying amounts which prospective sellers are willing and able, or are imputed to be willing and able, to offer at varying, though not necessarily corresponding, hypothetical prices.

In illustration of these statements we may construct the following demand-and-supply schedules and curves for commodity x , noting that these schedules and curves, while in general representative of all commodities, are constructed without reference to the time element, and therefore must not be taken as the complete and final representation of demand and supply.⁸

DEMAND SCHEDULE

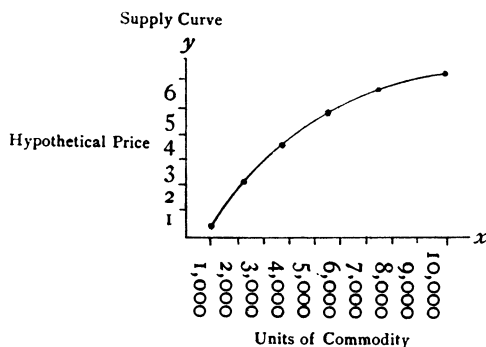
Hypothetical Price	Units of Commodity Hypothetically to be Taken
1 y	10,000 x
2 y	7,000 x
3 y	5,000 x
4 y	3,500 x
5 y	2,500 x
6 y	2,000 x



⁸ It is, of course, to be understood that these schedules represent only portions or segments of possible demand and supply considered with reference to quantity and price.

SUPPLY SCHEDULE

Hypothetical Price [*]	Units of Commodity Hypothetically to be Disposed of
1 y	2,000 x
2 y	2,500 x
3 y	3,500 x
4 y	5,000 x
5 y	7,000 x
6 y	10,000 x



It remains now to attempt an expression of the market demand and supply of a commodity in terms of the three distinct market-bargain factors—quantity, price, and time. This attempt will constitute the second part of our discussion concerning the general characteristics of these phenomena.

ROBERT H. HOXIE.

CORNELL UNIVERSITY.

*It is to be understood, of course, that these figures and illustrations are merely arbitrary; there is no necessary reciprocal relation between the extent of demand and supply as here represented.